

JUL 06 2004

Serial No. 10/666,166
67008-079
S-5696

REMARKS

OFFICIAL

Applicant wishes to thank the Examiner for the detailed remarks. Claims 1-20 are pending.

Claims 1, 2, 3, 6, 7, 9, 15, and 16 were rejected under 35 U.S.C. §102(b) as being anticipated by *Sargent* (3,411,738). Applicant respectfully traverses this rejection. *Sargent* simply fails to disclose a plurality of vorticity generating protuberances. *Sargent* discloses a wingtip 16, 18 of a fixed wing airplane, particularly, a crop-duster type airplane. The wingtips are smooth. Each wingtip curves and converges generally outwardly and downwardly from its inboard end 26 to its outboard end 28. [col. 3, lines 48-55; Figures 4 and 5] Applicant respectfully states that the Examiner has misconstrued the spanwise cross-sections *a-o* as separate protuberances when in fact they only define the wingtip shape in discrete planes. In other words, the spanwise cross-sections *a-o* [see Figures 3, 4 and 5] illustrate the shape of the continuous wingtips 16, 18 at various stations along the chord of the wingtip as is conventionally provided to illustrate the relatively complex shape of an airfoil. The claims are properly allowable.

Separately, Applicant specifically disagrees with the Examiner's contention that a plane wing is inherently a rotating aerodynamic surface. This simply cannot be sustained as an airplane utilizes a fixed wing, while a helicopter-type aircraft utilize a rotary wing. To suggest one is inherently the same as the other is to suggest that there is no difference to the mechanism of flight between an airplane and a helicopter. This cannot be sustained.

Claims 11-14 and 20 were rejected under 35 U.S.C. §102(b) as being anticipated by *Sargent* (3,411,738). Applicant respectfully traverses these rejections. Claim 11 recites generating small-scale vortices from a distal end of a surface that are at least partially entrained within the primary tip vortex to destabilize a core of said primary tip vortex. *Sargent* discloses direction of the wingtip vortices downwardly. [col 4, lines 15-42] *Sargent* only directs the primary wingtip vortices to minimize laterally outward and upward spreading of the dust or spray from a crop

Serial No. 10/666,166

67008-079

S-5696

duster aircraft. [col. 4, lines 31-35]. *Sargent* completely fails to disclose or suggest generating small-scale vortices ... at least partially entrained within the primary tip vortex. That is, *Sargent* is only concerned with the primary tip vortices. The claims are properly allowable.

Claims 4, 8, 10 and 17 were rejected under 35 U.S.C. §103(a) as being unpatentable over *Sargent* (3,411,738) in view of *Perry*. Applicant respectfully traverses these rejections as there is absolutely no teaching, suggestion, or motivation to modify *Sargent* in view of *Perry* as proposed. As described above, *Sargent* discloses only a wingtip of a fixed wing aircraft, while *Perry* discloses anhedral in a rotor blade. In fact, *Sargent* and *Perry* both disclose application of forms of anhedral and sweep to the tip of an airfoil. A proper suggestion or motivation to make a combination requires some benefit to result from the combination. When the additional teachings of a secondary reference do not provide any benefit to the arrangement disclosed in a primary reference, no prima facie case of obviousness exists. Because this combination provides no benefit because they are essentially redundant, the combination is improper and there is no prima facie case of obviousness. The claims are properly allowable.

Claim 5 was rejected under 35 U.S.C. §103(a) as being unpatentable over *Sargent* (3,411,738) in view of *Perry*, and further in view of *Corjon*. Applicant agrees that *Corjon* may disclose a retractable member, however, this is moot as the combination of *Sargent* and *Perry* is improper. Moreover, even if the combination were proper, *Sargent* and *Perry* fail to disclose any protuberances to be retracted. The claims are properly allowable.

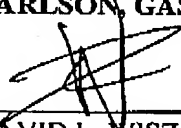
Even if the combination were properly made, there are differences between the claimed invention and the teachings of the cited references so that the combination does not meet the limitations of Applicant's claims. As described above, none of the cited references disclose a plurality of vorticity generating protuberances.

Serial No. 10/666,166
67008-079
S-5696

Again, Applicant does not claim to have invented the concept of vortex generation. Rather, Applicant has provided a unique way of destabilizing a primary tip vortex. The claims are patentable.

Applicant respectfully submits that this case is in condition for allowance. If the Examiner believes that a teleconference will facilitate moving this case forward to being issued, Applicant's representative can be contacted at the number indicated below.

Respectfully Submitted,
CARLSON, GASKEY & OLDS, P.C.



DAVID L. WISZ
Registration No. 46,350
Attorneys for Applicant
400 West Maple, Suite 350
Birmingham, Michigan 48009
(248) 988-8360

Dated: July 6, 2004

N:\Clients\SIKORSKY\IP00079\PATENT\HELOAmnd079-05-04-2004-.doc